

WHAT IS CLAIMED IS:

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1. A semiconductor device comprising:
a semiconductor layer formed over a substrate having an insulating surface, the semiconductor layer comprising at least one channel region, source and drain regions, and at least one impurity region located between one of source and drain regions and the channel region; and
a gate electrode formed over the semiconductor layer with a gate insulating film interposed therebetween;
wherein the impurity region is partially overlapped with a portion of the gate electrode, and
wherein the overlapped portion of the gate electrode has a thinner thickness than that of a portion of the gate electrode above the channel region.
2. A device according to claim 1, wherein an angle formed between a side of the gate electrode and the gate insulating film is from 3 to 40.
3. A device according to claim 1, wherein the impurity region and the source and drain regions include one of periodic table group 15 elements as an impurity element.
4. A device according to claim 1, wherein said semiconductor device is an EL display device.
5. Electronic equipment, wherein said electronic equipment uses a semiconductor device according to claim 1.
6. An electronic equipment according to claim 5, wherein said electronic equipment is selected from the group consisting of a video camera, a digital camera, a projector, a projection television, a goggle-type display, a head mount display, a navigation system for vehicles, a sound reproduction device, a note-type personal computer, game equipment, a portable information terminal, a mobile computer, a cellular phone, a handheld game unit, an electronic book, and an imaging device equipped with recording medium.
7. A semiconductor device comprising:
a semiconductor layer formed over a substrate having an insulating surface, the semiconductor layer comprising at least one channel region, source and drain regions, and at least one impurity region located between one of source and drain regions and the channel region; and
a gate electrode formed over the semiconductor layer with a gate insulating film interposed therebetween;
wherein the impurity region is partially overlapped with a portion of the gate electrode, and

wherein the portion of the gate electrode overlapped with the impurity region is a tapered portion of the gate electrode.

8. A device according to claim 7, wherein the tapered portion has an angle from 3 to 40 between a side of the gate electrode and the gate insulating film.

9. A device according to claim 7, wherein the impurity region and the source and drain regions include one of periodic table group 15 elements as an impurity element.

10. A device according to claim 7, wherein said semiconductor device is an EL display device.

11. Electronic equipment, wherein said electronic equipment uses a semiconductor device according to claim 7.

12. An electronic equipment according to claim 11, wherein said electronic equipment is selected from the group consisting of a video camera, a digital camera, a projector, a projection television, a goggle-type display, a head mount display, a navigation system for vehicles, a sound reproduction device, a note-type personal computer, game equipment, a portable information terminal, a mobile computer, a cellular phone, a handheld game unit, an electronic book, and an imaging device equipped with recording medium.

13. A semiconductor device comprising:

a semiconductor layer formed over a substrate having an insulating surface, the semiconductor layer comprising at least one channel region, source and drain regions, and at least one impurity region located between one of source and drain regions and the channel region; and

a gate electrode formed over the semiconductor layer with a gate insulating film interposed therebetween;

wherein the impurity region comprises a first portion overlapped with a portion of the gate electrode and a second portion that does not overlapped with the gate electrode, and

wherein the portion of the gate electrode overlapped with the first portion has a thinner thickness than that of a portion of the gate electrode above the channel region.

14. A device according to claim 13, wherein an angle formed between a side of the gate electrode and the gate insulating film is from 3 to 40.

15. A device according to claim 13, wherein the impurity region and the source and drain regions include one of periodic table group 15 elements as an impurity element.

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16. A device according to claim 13, wherein said semiconductor device is an EL display device.

17. Electronic equipment, wherein said electronic equipment uses a semiconductor device according to claim 13.

18. An electronic equipment according to claim 17, wherein said electronic equipment is selected from the group consisting of a video camera, a digital camera, a projector, a projection television, a goggle-type display, a head mount display, a navigation system for vehicles, a sound reproduction device, a note-type personal computer, game equipment, a portable information terminal, a mobile computer, a cellular phone, a handheld game unit, an electronic book, and an imaging device equipped with recording medium.

19. A semiconductor device comprising:

a semiconductor layer formed over a substrate having an insulating surface, the semiconductor layer comprising at least one channel region, source and drain regions, and at least one impurity region located between one of source and drain regions and the channel region; and

a gate electrode formed over the semiconductor layer with a gate insulating film interposed therebetween;

wherein the impurity region comprises a first portion overlapped with a portion of the gate electrode and a second portion that does not overlapped with the gate electrode, and

wherein the portion of the gate electrode overlapped with the first impurity region is a tapered portion of the gate electrode.

20. A device according to claim 19, wherein the tapered portion has an angle from 3 to 40 between a side of the gate electrode and the gate insulating film.

21. A device according to claim 19, wherein the impurity region and the source and drain regions include one of periodic table group 15 elements as an impurity element.

22. A device according to claim 19, wherein said semiconductor device is an EL display device.

23. Electronic equipment, wherein said electronic equipment uses a semiconductor device according to claim 19.

24. An electronic equipment according to claim 23, wherein said electronic equipment is selected from the group consisting of a video camera, a digital camera, a

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projector, a projection television, a goggle-type display, a head mount display, a navigation system for vehicles, a sound reproduction device, a note-type personal computer, game equipment, a portable information terminal, a mobile computer, a cellular phone, a handheld game unit, an electronic book, and an imaging device equipped with recording medium.

25. A semiconductor device comprising:

a semiconductor layer formed over a substrate having an insulating surface, the semiconductor layer comprising at least one channel region, source and drain regions, and at least one impurity region located between one of the source and drain regions and the channel region; and

a gate electrode formed over the semiconductor layer with a gate insulating film interposed therebetween;

wherein the impurity region comprises a first portion overlapped with a portion of the gate electrode and a second portion that does not overlapped with the gate electrode, and

wherein a impurity concentration of the first portion decreases in proportion to a distance from the one of the source and drain regions.

26. A device according to claim 25, wherein an angle formed between a side of the gate electrode and the gate insulating film is from 3 to 40.

27. A device according to claim 25, wherein the impurity region and the source and drain regions include one of periodic table group 15 elements as an impurity element.

28. A device according to claim 25, wherein said semiconductor device is an EL display device.

29. Electronic equipment, wherein said electronic equipment uses a semiconductor device according to claim 25.

30. An electronic equipment according to claim 5, wherein said electronic equipment is selected from the group consisting of a video camera, a digital camera, a projector, a projection television, a goggle-type display, a head mount display, a navigation system for vehicles, a sound reproduction device, a note-type personal computer, game equipment, a portable information terminal, a mobile computer, a cellular phone, a handheld game unit, an electronic book, and an imaging device equipped with recording medium.